

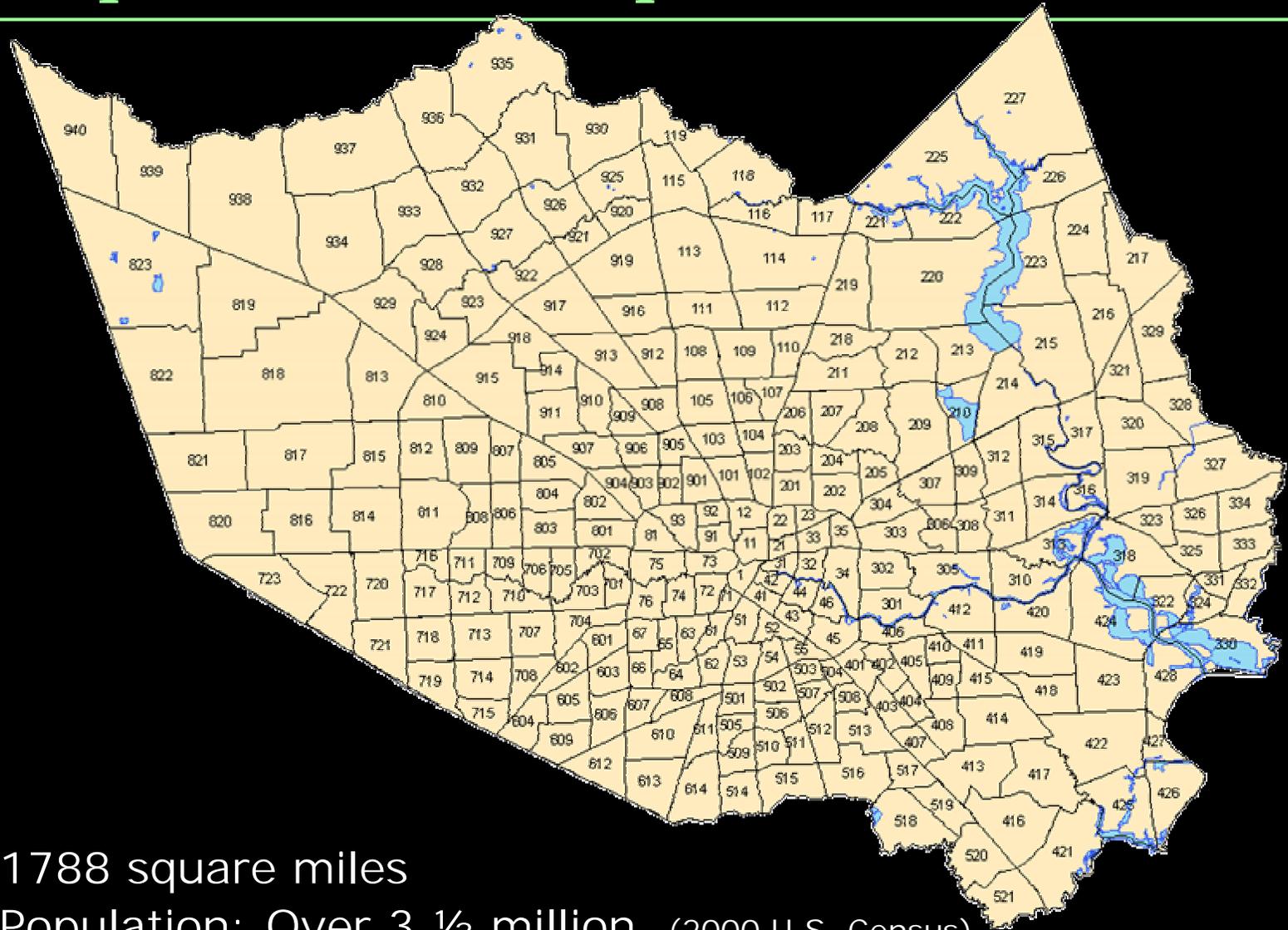
Laboratory and Field Tests
Conducted in Harris County (Houston), Texas in
2004
to Determine if Insecticide Resistance was Present in
Feral Strains of *Culex quinquefasciatus*

Presented by Dr. Ray Parsons



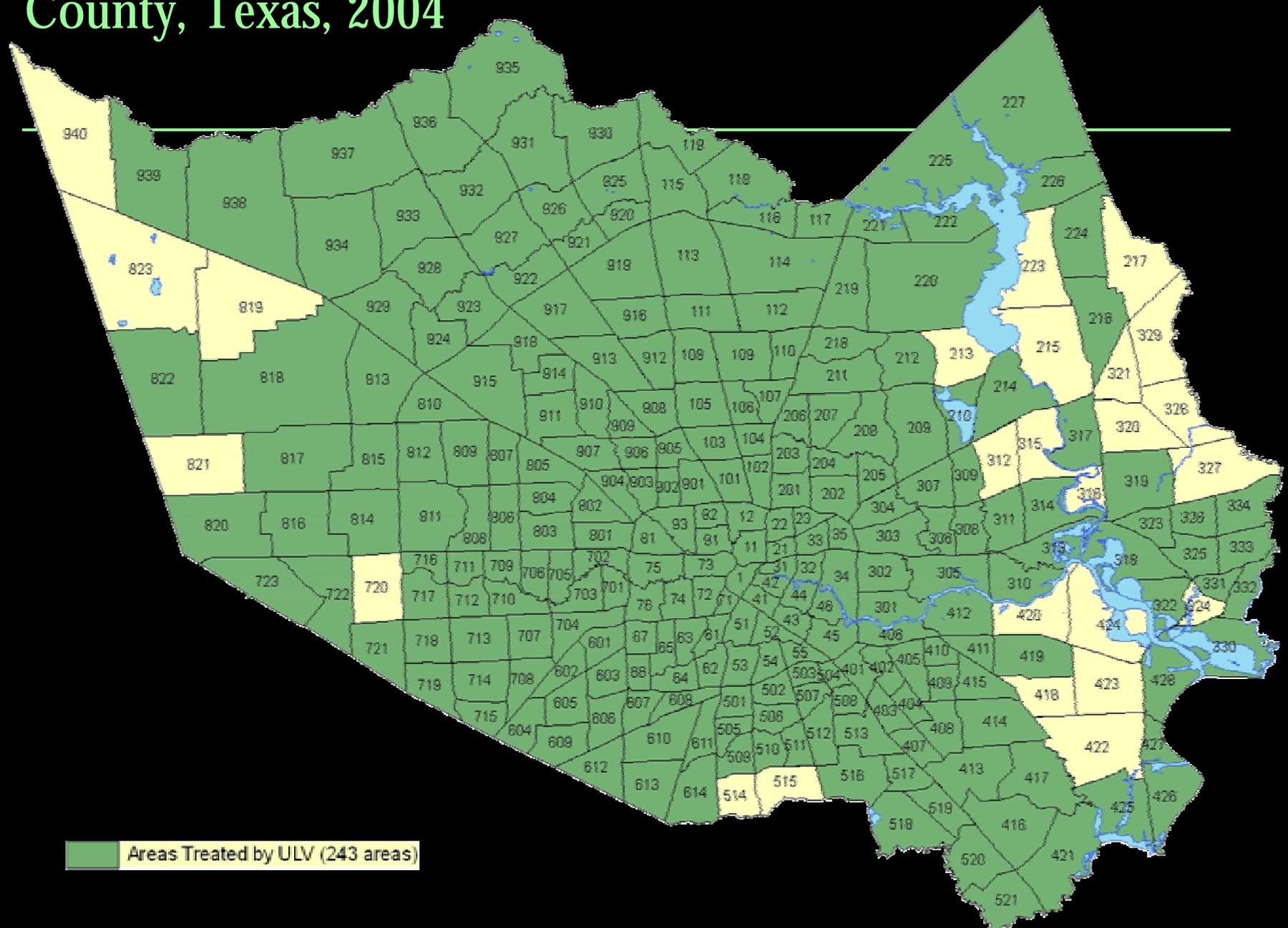
Harris County, Texas

Mosquito Control Operational Areas

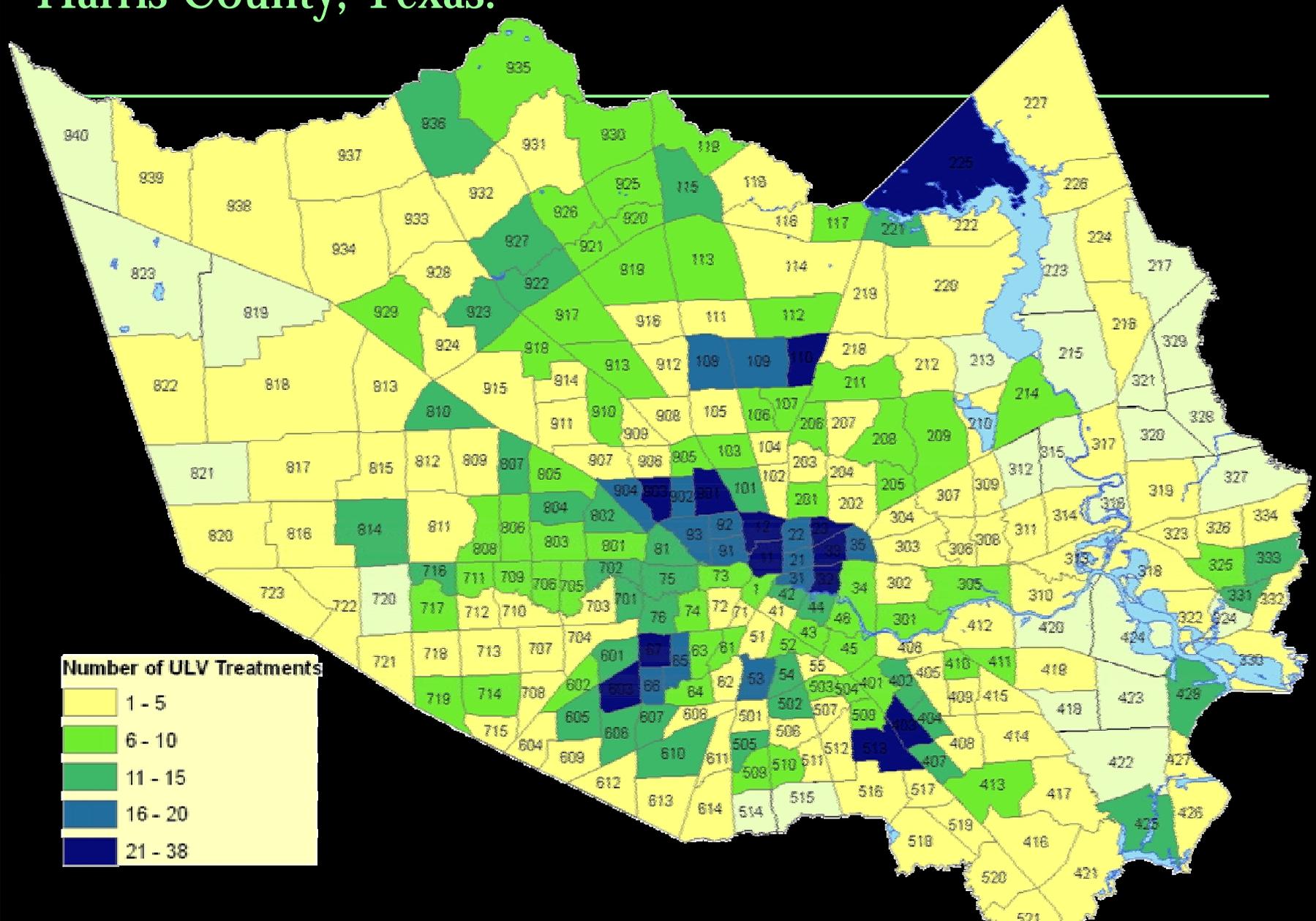


- 1788 square miles
- Population: Over 3 ½ million (2000 U.S. Census)

Operational areas treated by ground ULV in Harris County, Texas, 2004



Number of ground ULV treatments by operational in Harris County, Texas.



Susceptibility Tests Conducted in 2004

- Field Cage Tests

- Laboratory Tests

 - Topical Assay

 - Bottle Assay – Based on Time

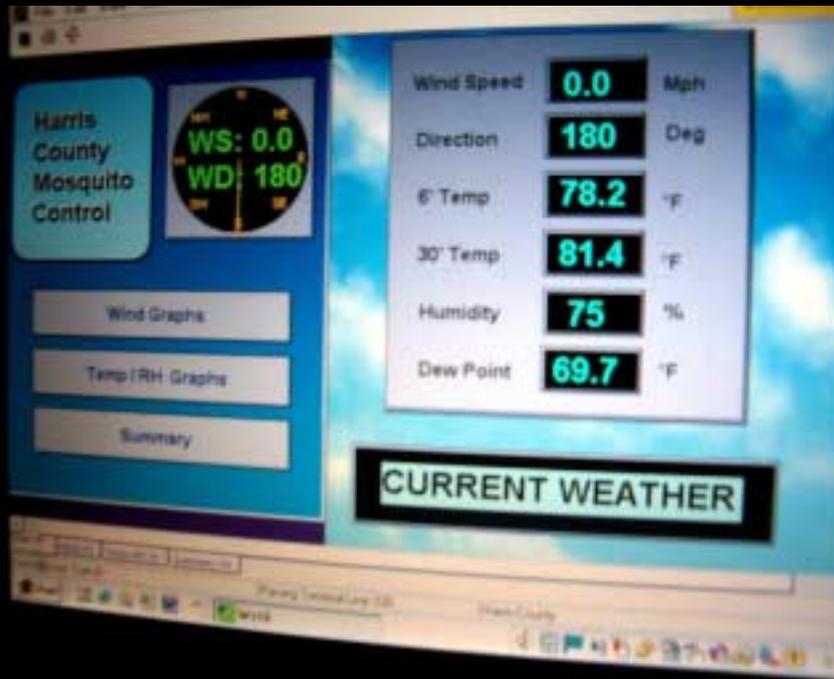
 - Bottle Assay – Based on Concentration

Field Tests





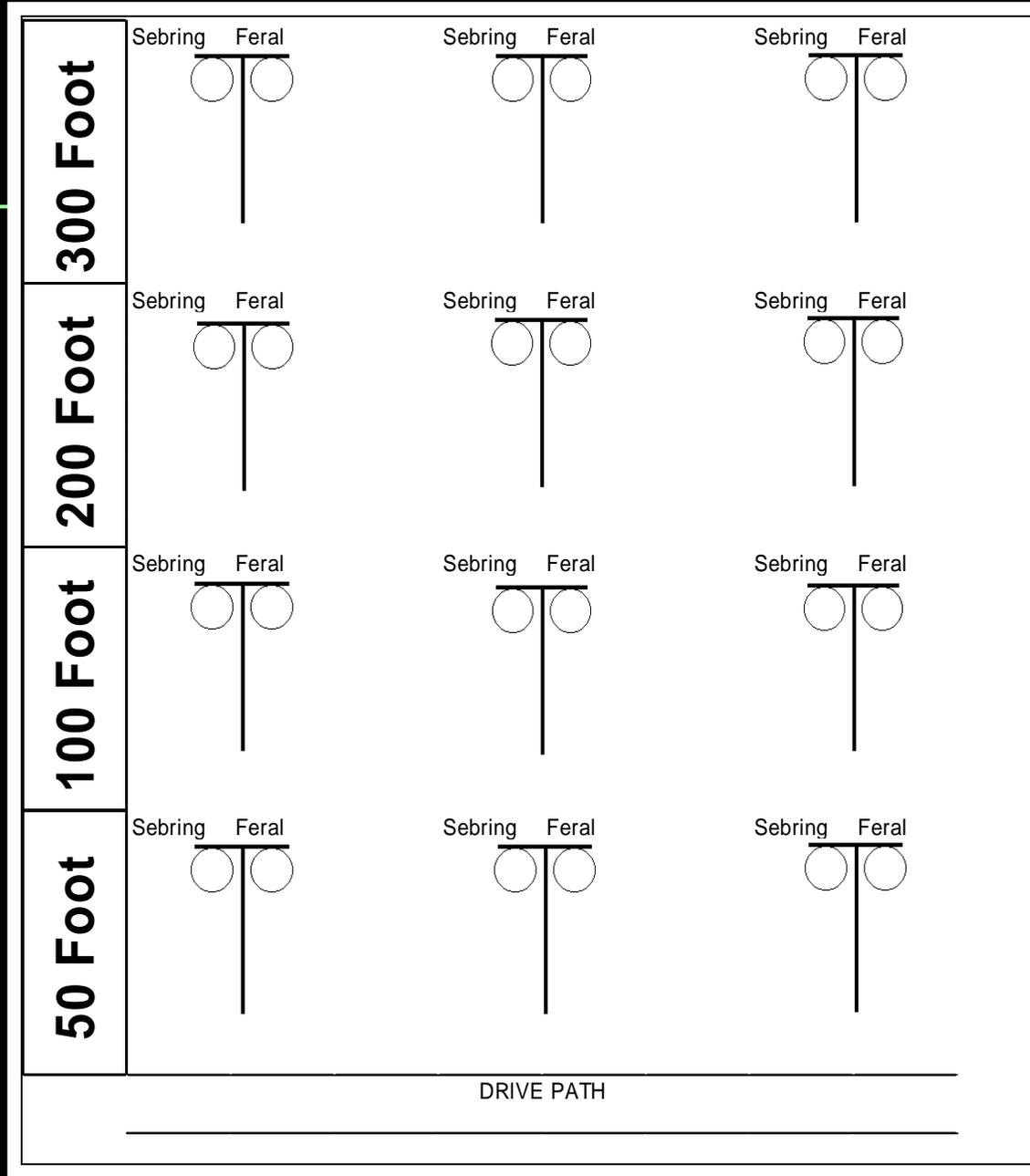
Weather Station



Test Equipment



Test Plot



Test Plot Site



El Franco Lee Park

Harris County Public Health and Environmental Services
Mosquito Control Division



El Franco Lee Park

Harris County Public Health and Environmental Services
Mosquito Control Division



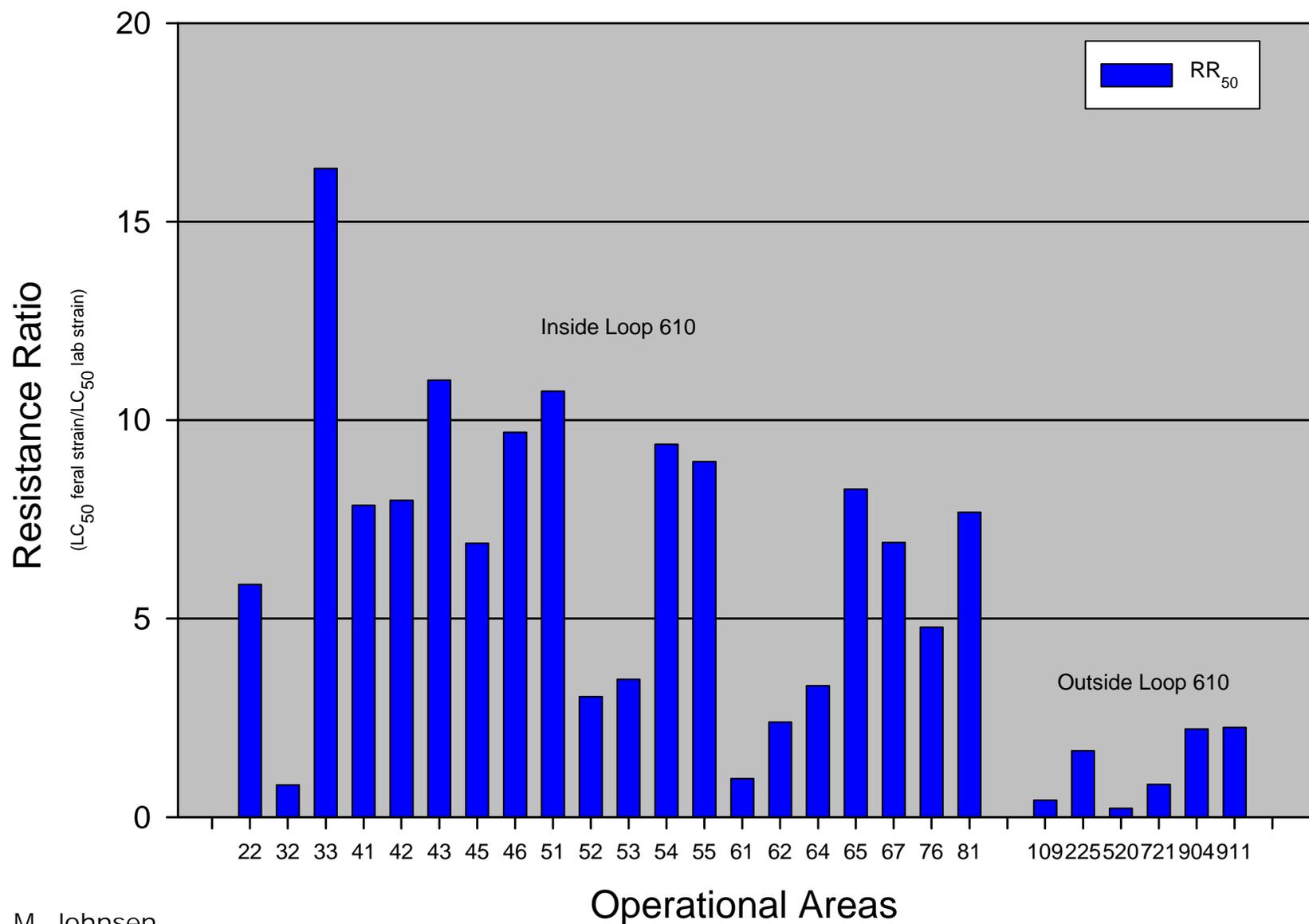
Average Percent Mortality for All Cages In Field Tests

	<u>Sebring</u>	<u>Feral</u>
Scourge[®] (0.003 lbs./ac)	56.0	53.3
Scourge[®] (0.007 lbs./ac)	79.9	64.0
Fyfanon[®] (0.055 lbs./ac)	88.3	75.3

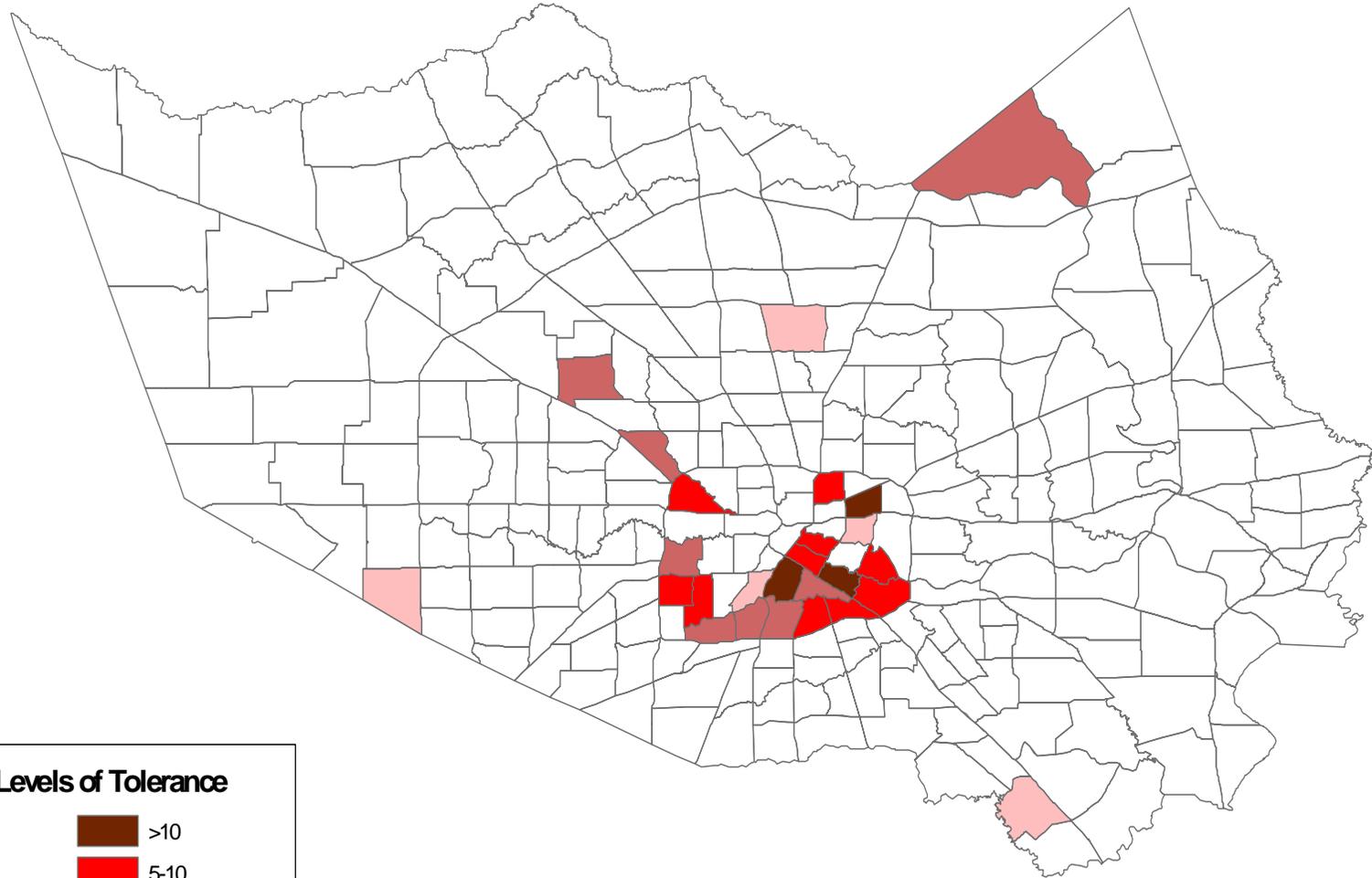
Susceptibility of Feral Strains of *Culex quinquefasciatus* to Fyfanon[®] (Malathion) from Harris County, Texas 2004 Determined by Topical Assay

Year		Strain	LD ₅₀ (ng/Female)	LD ₉₅ (ng/Female)	RR LD ₅₀	RR LD ₉₅
2004	Fyfanon [®]	Sebring	11.6	124.4	-----	-----
		Area 51	70.6	148.1	6.1	1.2
		Area 53	40.3	179.7	3.5	1.4
		Area 67	47	330.8	4.1	2.7
		Area 520	38	145.2	3.3	1.2

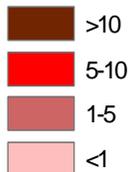
Scourge[®] 18-54, LD₅₀ Resistance Rates from Feral Strains of *Culex quinquefasciatus* in Harris County, Texas



Levels of Tolerance to Scourge[®] 18-54 of Feral Strains of *Culex quinquefasciatus* from Selected Operational Areas in Harris County, Texas



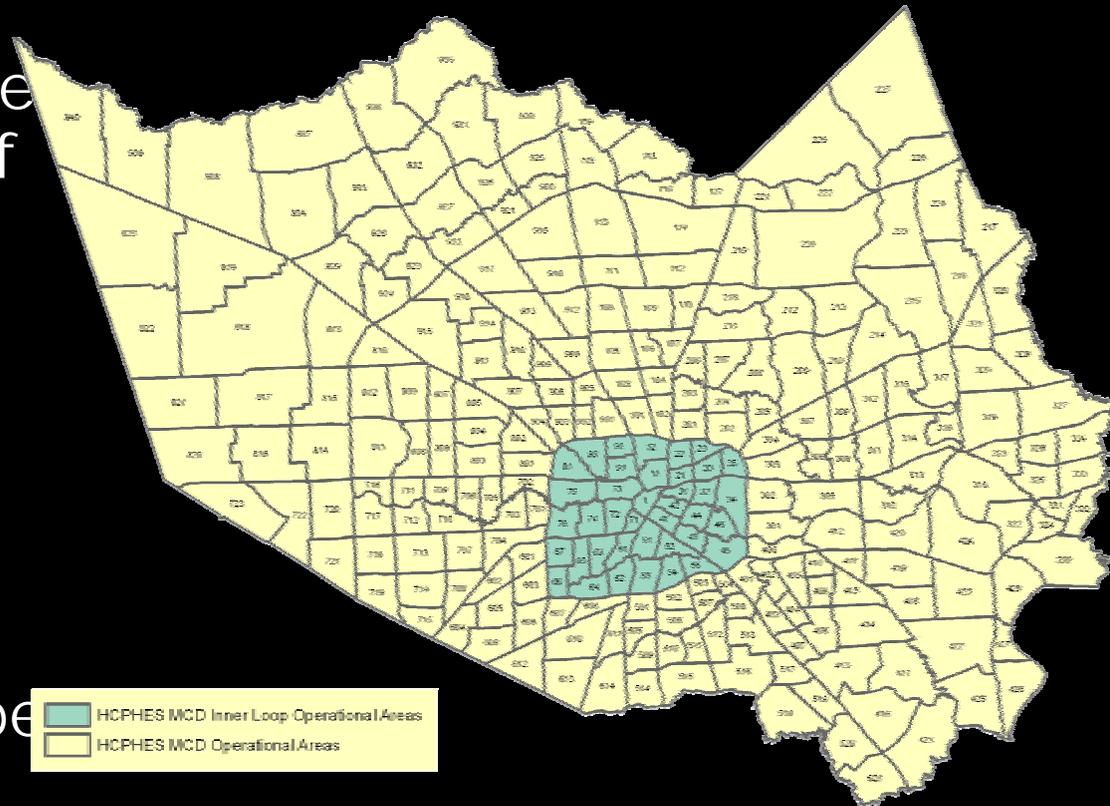
Levels of Tolerance



Summary

- Malathion will be used in 2005 in the Inner-Loop area of Houston.

- Scourge[®] (resmethrin) will be used in 2005 outside the Inner-Loop area.



What about the future?

- ▣ Is pyrethroid resistance on the horizon?



Problems Facing Mosquito Control Agencies in the next 5-10 years

- ❑ Excessive use of pyrethroids by homeowners, pest control companies, agriculture and mosquito control agencies
- ❑ Lack of susceptibility testing by state and local agencies
- ❑ Interpretation of results for laboratory and field susceptibility tests

Principal Investigators: Field Tests, CDC Bottle Bioassay, and Topical Application Tests

Pam Stark

Nathan Vessey

Kyle Flatt

Harris County PHES Mosquito Control
Houston, Texas



Principal Investigators:

Bottle Bioassay Diagnostic Dose Technique

Mark Johnsen

Jim Olson

Department of Entomology
Texas A&M University
College Station, Texas



Maps and PowerPoint Presentation

Nathan Vessey
Christina Hailey

Harris County PHES Mosquito Control
Houston, Texas





www.harriscountyhealth.com

